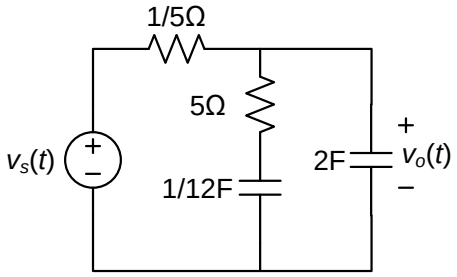
1. If $v(t) = 3te^{-2t}u(t-1)$, find V(s). Hint: only numbers in solution are 2,3.

2. Find $\mathrm{y}(0)$ and $\mathrm{y}(\infty)$ if the system is $\mathrm{H(s)} = \frac{2}{s^2+6s+10}$ and the input is $\mathrm{x(t)} = 5\mathrm{e}^{-2\mathrm{t}}$. Hint: Not much.

3. Same as above but find $y(t)$. Hint: use above problem to verify at $\mathrm{y}(0)$ and $\mathrm{y}(\infty)$.

4. Find y(t) = x(t) * h(t) by both integral and graphical methods if x(t) = -h(t) = u(t-1). (Note: on a test, the graphical problem would be limited to flat-topped functions (steps and pulses), but it would probably have exponentials if the problem specified use of integral methods). Hint: y(-1) = 0, y(2) = 0, y(4) = -2.

5. Find the circuit
   a. transfer function
   b. impulse response
   c. differential equation
   d. s-plane plot



   Hint: a) has only integers 2, 5, and 6 if written in standard format.

6. The differential equation describing a system is $3y'(t) + y(t) = x''(t)$. Find the output $y(t)$ if the input is $x(t) = 4e^{-t/3}$. Hint: is it proper? Hint: 4/27 in answer.

7. Thought question: If you are given a circuit, whose input is not specified (say it is an unknown voltage source), is it possible to find the circuit's system transfer function? Explain.